REMARKS

This is in response to the Office Action dated November 15, 2004. Claims 40-64 have been cancelled without prejudice or disclaimer, and newly added Claims 65-83 have been respectfully submitted. It is respectfully submitted, as amended, all the pending claims are allowable.

Antecedent Support of Newly Added Claims

The newly added Claims 65-83 have been fully supported by the specification as originally filed; and therefore, an entry of these newly added claims is respectfully solicited.

Regarding Claims 65, 68, 74, 77, 80 and 82, the power level difference and distance relationship between the radiated RF emission received by the first and second RF sensors have been disclosed in page 12, lines 4 to 24 of the originally filed specification. The signal processing system and various ways that the signal processing process to determine magnitude of the radiated RF emission has been disclosed in page 16-23.

In Claims 66 and 76, the features of "non-stationary" local transmitters can be found from line 33, page 11 to line 3, page 12, which discloses the ambient RF signals may be produced by local television and radio stations, cellular phones, citizens band radios, ham radios, civil radios (e.g., police, ambulance, fire), and aircraft radios.

The unknown arrival directions of the ambient RF signals as claimed in Claims 67 and 74 has been disclosed in page 16, lines 11-12, and the unknown phase relationship and the half filter length delay as claimed in Claims 72, 73, 78 and 79 have been disclosed in page 16, lines 4-18.

Summary of the Current Application

The current application discloses a system and a method for measuring RF emissions radiated from an electronic device, so as to ensure the RF emissions radiated from the electronic device does not produce harmful amounts of radiated RF emissions. As disclosed in the originally filed specification, many government regulators, such as FCC, impose various regulations and immunity regulations on equipment manufacture. Such regulations

include ensuring that radiated RF emissions from electronic equipment are below certification levels **at specified distances** and over specified frequency range (page 2, lines 1-9).

Further, it is well known in the art that the field strength or power level of RF emission radiation is a distance-dependent factor which is often represented in microvolt per meter. For example, in FCC 15.109(a), the radiated RF emissions are measured at 3-meter distance for the all unintentional radiators except from Class A digital device and at 10-meter distance for all Class A digital devices. As the measuring device is displaced away from the electronic device, the RF emission radiated from the electronic device attenuates. Based on this rationale, the present invention discloses a measuring system and a measuring method to measure the radiated RF emission, in which the primary measuring device is placed at a specified distance from the electronic device, while a second measuring device is placed at a distance several times longer than the specified distance, such that the RF emission radiated from the electronic device attenuates to a level insignificant to the second measuring device. Thereby, the second measuring device measures primarily the ambient RF signal, while the first measuring device measures, at the specified distance, primarily both the radiated RF emission and the ambient RF radiation, particularly the ambient RF radiation stronger than the RF emission.

In addition, both the first and second RF sensors are required to be operative to receive the ambient RF signals arrived from any unknown direction to effectively suppress the interference caused the ambient RF signals from any unknown direction from the radiated RF emission. Further, as the first and second RF sensors are spaced apart from each other by a distance larger than the distance between the first RF sensor and the electronic device, the phase relationship between the first and second RF are unknown; and therefore, a half-filter length delay is required to performed required phase retard or advance.

The Cited References

<u>*Mescher et al. (US 6,289,004)*</u>

Mesecher et al. discloses a wireless digital communication system that has one or more base stations each being able to communicate with a plurality of mobile or fixed

subscriber units 25 at various locations (col. 3, lines 1-3). The system uses a main antenna 37 to receive signals from the subscriber units 25, an auxiliary antenna 39 focused and directed to a known interferer 47 so as to receive interference signals propagating along a known direction, and an adaptive canceller 41 to subtract interference from the signal received by the main antenna 37 (col. 3, line 64 to col. 4, line 2).

As understood, the purpose of the communication system disclosed by Mescher et al. is to receive the signals from all the subscriber units 25 at all locations and remove interference caused by a known interferer 47 from the signals. That is, the signals (radiated RF emissions) are received regardless what the distance between the subscriber unit (the electronic device) and the main antenna (the first RF sensor) is. Therefore, Mescher et al. fails to teach or even suggest the first RF sensor operative to receive the radiated RF emission at a specified distance; and consequently, Mescher fails to teach the signal processing system operative to determine the amount of the radiated RF emission at the specified distance.

As specifically disclosed in col. 3, line 64 to col. 4, line 2, the auxiliary antenna 39 (the second RF sensor) is used to receive signal from a known interferer 47 by simply directing and focusing the auxiliary antenna to the known interferer 47. This explicitly shows that the ambient signal arrives at the first and second RF sensors with a known direction. In addition, the only example for the known interferer disclosed by Mesecher et al. is a local radiation station, which is a stationary transmission source.

Further in col. 10, lines 12-15, Mesecher et al. specifically discloses "**The main antenna and auxiliary antenna(s) must be placed relatively close to each other to make sure that the receive signal from the antennas are not subjected to different channel response**". This does not only teaches away the distance limitations between the electronic device, the first RF sensor, and the second RF sensor, but also teaches away the "unknown phase relationship" between the first and second RF receivers. As a result, Mesecher et al. fails to teach using a half-filter length delay for phase retard or advance.

Clough (US 4,672,674)

Clough discloses an acoustic communication system that comprises a first microphone and a second microphone.

Firstly, Clough fails to teach or suggest measuring the magnitude or power level of speech at a specified distance; and consequently, there is desirability to demodulate the signals received by the microphones. Clough also fails to disclose a signal processing system to determine an amount of the RF emission from an electronic device.

The Newly Added Claims

The Independent Claims

Claim 65

In the newly added Claim 65, a system for measuring distant-dependent RF emissions radiated from an electronic device is disclosed. The system includes a first RF sensor for receiving the RF emission radiated from the electronic device **at a specified first distance** and ambient RF signals, and a second RF sensor for **receiving the radiated RF emission** at a power level **at least 20dB lower** than that received by the first RF sensor and the ambient RF signals. The system further comprises a signal processing system to determine the magnitude of the distant-dependent RF emissions.

As discussed above, what Mesecher et al. disclosed is a system allowing signals from various subscriber units received without being interfered by a known interferer. There is no desirability for Mesecher et al. to measure the amount of the RF emission at all. Further, Mesecher et al., by specifically teaching that the main antenna and the auxiliary antenna have to be placed relatively close to each other, teaches away "the second distance being large enough to allow the second sensor operative to receive the radiated RF emissions with a power level at least 20 dB lower than that received by the first RF sensor and the RF ambient signals" as claimed in Claim 65. Apparently, as claimed, the distance between the first and second RF sensors are relative farther compared to the distance between the first RF sensor and the electronic device to obtain the 20 dB power reduction.

In addition to the above, Mesecher et al. teaches only one RF receiver connected to both the first and second RF sensors. Mesecher et al. fails to teach the second RF sensor.

Clough teaches a system using a first microphone to receive primarily the speech and a second microphone to receive primarily the background noise. Clough, though teaches a specific distance between the first and second microphones, fails to teach the specific power reduction of 20 dB. Further, Clough fails to teach any device for measuring the RF emission at a specified distance. That is, neither Mesecher et al. nor Clough has suggested the distance dependence of the RF emission at all.

In addition, regardless what has been disclosed in Clough, if one of ordinary skilled in the art modifies the primary reference, Mesecher et al., by incorporating the distance relationship as claimed between the main antenna and the auxiliary antenna, the principle of operation, that is, to make sure the receive signal from the antennas are not subject to different channel responses, will be changed. Therefore, there is no motivation or suggestion of combining or modifying Mesecher et al. with any reference to read on Claim 65, *In re Ratti*, 270 F.2d at 813, 123 USPQ at 352". Claim 65 and its dependent Claims 66-73 are thus patentable over Mesecher et al. and Clough, individually or in combination.

<u>Claim 74</u>

In Claim 74, the RF emission radiated from an electronic device is claimed. In the system, a first RF sensor and a second RF sensor are included to receive the ambient RF signals and the RF emission radiated from the electronic device at different distances. The distance for the second RF sensor is at least a predetermined times larger than that of the first RF sensor. Consequently, the distance between the first and second RF sensors are relatively larger than that between the first RF sensor and the electronic device. Further, the ambient RF signals include the RF signals arrived from unknown direction.

As discussed above, Mesecher et al. fails to explicitly or inherently disclose the distance dependence of the radiated RF emission as claimed. Further, Mesecher et al., by specifically teaching the main antenna (first RF sensor) and the auxiliary antenna (second RF sensor) are placed relatively close to each other, teaches away "the second distance is at least a predetermined times larger than the first distance" as claimed. Mesecher et al. also fails to teach the second RF receiver.

Therefore, regardless what the secondary reference teaches, there is no motivation or suggestion to modify or combine Mesecher et al. by incorporate the distance relationship as claimed in Claim 74.

Clough does not only fail to teach the RF radiation, but also fail to suggest any desirability for measuring the RF emission radiated form an electronic device at a specified distance.

Therefore, Claim 74 and its dependent Claims 75-79 are patentably distinguishable over Mesecher et al. and Clough.

Claim 80

Claim 80 discloses a method of measuring RF emissions radiated from an electronic device in the environment having a plurality of ambient RF signal sources. The method includes receiving the radiated RF emission and the ambient RF radiations at a specified first distance, and using a second RF sensor to receive the ambient RF radiations at a second distance. The second distance is at least a predetermined times longer than the first distance.

Both Mesecher et al. and Clough fail to teach measuring the RF emission as a function of distance. Mesecher et al. also fails to teach using the second RF receiver, while Clough does not teach any RF receiver at all. Further, Mesecher et al. teaches away the distance relationship between the first and second RF sensors. Further, there is no suggestion or motivation to combine Mesecher et al. and Clough. Therefore, Claim 80 and its dependent Claims 81-83 are patentable over Mesecher et al. and Clough.

The dependent claims

Claims 66 and 76

In Claims 66 and 76, the local transmissions include non-stationary sources. On the contrary, Mesecher et al. teaches a fixed RF radiation source, that is, the known interferer. Therefore, Mesecher et al. teaches away Claims 66 and 76.

Claim 67

In Claim 67, the arrival direction of the ambient RF signals is unknown. Mesecher et al. teaches the unknown arrival direction. In addition, modifying the known directional

interference from the known interferer will render the auxiliary antenna placed close to the main antenna inoperative.

Claims 68 and 77

Claims 68 and 77 disclose the specific distance relationship between electronic device, the first RF sensor and the second RF sensor. Neither Mesecher et al. nor Clough teaches or suggests such distance relationship.

Claims 69, 70 and 81

Although Mesecher et al. teaches synchronization of the received signals is required before subtraction can be made, Mesecher et al. does not specifically teach such synchronization is performed by more than one clock as claimed in Claim 69 or an external reference signal as claimed in Claim 70.

Regarding Claim 81, the synchronization is performed on the first and second RF receivers. However, what Mesecher et al. discloses is the synchronization of the received signals. As claimed in the independent Claim 80, the first and second RF receivers are used to demodulate and digitize the outputs of the respective RF sensors, such that synchronization is performed between the RF receivers. Mesecher et al. discloses a single RF receiver, it is meaningless to perform synchronization on a single RF receiver. Clough also fails to teach the synchronization step.

Claims 72-73 and 83

Claims 72-73 and 83 disclose unknown phase relationship between the first and second RF receivers and the half-filter length delay. Mesecher et al. fails to explicitly or inherently disclose the unknown phase; and consequently fails to suggest the half-filter length delay.

Claim 82

Neither Mesecher et al. nor Clough teaches the 20 dB power reduction.

As discussed, it is believed that all the pending claims are patentable, and a notice of allowability is respectfully solicited.

If any additional fee is required, please charge Deposit Account Number 19-4330.

Respectfully submitted,

Date: 3/14/05 By: [signature]

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